



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,010	12/10/2003	Hirohito Kondo	32739M092	6741
441	7590	09/16/2005	EXAMINER	
SMITH, GAMBRELL & RUSSELL, LLP 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036			PHAM, HAI CHI	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/731,010	Applicant(s) KONDO ET AL.	
	Examiner Hai C. Pham	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed * after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/10/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1, 3-4, 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Nagumo et al. (U.S. 6,603,496).

With regard to claim 1, Nagumo et al. discloses an image recording apparatus comprising an LED array (LED head 3 comprising a linear array of LEDs) composed of a plurality of LED elements whose lighting is controlled according to image data and a driving circuit (e.g., shown as a print data compensation circuit 2 in Fig. 10 for driving the LED head 3) (col. 7, lines 14-17) for driving the plurality of LED elements, and an LED array controller (printing control unit 1) for controlling driving of the LED print head, wherein the image forming apparatus further comprises a selective-information data feeder for storing information data corresponding to different sets of selective information inherent to the image forming apparatus and for feeding out information data corresponding to a selected item of the selective information (the adjustment circuit 22 comprises a set of pre-stored combinatorial patterns of toner dots and compensated data for correcting the drive current of the LED array such that the output energy of the LED array results in uniform size of toner dots) (col. 9, lines 46-59), and wherein the LED array controller comprises a characteristic data memory for storing a plurality of sets of characteristic data each relating to one of the plurality of LED elements (col. 7, lines 25-29), and a driving current correction data calculator for reading out the characteristic data from the characteristic data memory while receiving the information data from the selective-information data feeder in order to calculate, based on the characteristic data and the information data, driving current correction data for each of the plurality of LED elements (the adjustment circuit 22 alternatively comprises a pre-stored set of weighting

coefficients to calculate the compensated print data values for correcting the drive current of the LED array) (col. 11, lines 42-52).

With regard to claim 5, Nagumo et al. teaches a detected data feeder for detecting time-related variation in the image forming apparatus in order to feed out detected data (temperature-humidity sensor 30 for detecting the environmental temperature and humidity of the printer to feed the corresponding data to the printing control unit 1 to be compared with the pre-stored print data values of various temperature and humidity conditions in order to correct the drive current of the LED array) (col. 10, lines 28-38) (col. 10, line 64 to col. 11, line 22) (Fig. 15).

Nagumo et al. further teaches:

- the different sets of selective information correspond to a plurality of screens with different characteristics (the compensation is not only directed to the gray scale of the print data but also to the resolution of the pixels) (col. 15, lines 1-30),
- the different sets of selective information correspond to a plurality of toner colors (the toner dots being adjusted for a monochrome printer as well as for a color printer) (col. 16, lines 7-11),
- the detected data feeder detects atmospheric temperature inside the image forming apparatus (e.g., ambient temperature of the image recording apparatus) and feeds out the temperature as the detected data,
- the detected data feeder detects humidity inside the image forming apparatus (ambient humidity) and feeds out the humidity as the detected data (col. 15, lines 31-35).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. ('496) in view of Nagumo (U.S. 6,028,472).

Nagumo et al. ('496) discloses all the basic limitations of the claimed invention including the pre-stored compensation data for correcting the driving current of the LED array but does not explicitly disclose the pre-stored data being the driving current correction data.

Nagumo ('472) teaches an LED printing device comprising a driving circuit for supplying driving current to the LEDs that includes a compensation memory (230c, Fig. 14) that stores the corrected driving current data, which are calculated based on the detected ambient temperature data and the compensated driving current data corresponding to room temperature previously stored in the EEPROM (100e) (col. 21, lines 25-44).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the corrected driving current memory into the device of Nagumo et al. ('496) as taught by Nagumo ('472). The motivation for doing so would have been to provide optimal driving current to the LED elements.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. ('496) in view of Inamura et al. (U.S. 6,297,872).

Nagumo et al. ('496) discloses all the basic limitations of the claimed invention except for the detection of the number of sheets of paper.

Inamura et al. discloses an image forming apparatus comprising the detection of a predetermined number of recording sheets at which time the dot diameter change at the ambient temperature of the printing system is controlled, the printing system includes any one of the ink jet and light emitting type printer.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the detection of the number of recording sheets in the device of Nagumo et al. ('496) as taught by Inamura et al. The motivation for doing so would have been to constantly monitor the change of the parameters relating to print data in accordance with the change of the temperature.

8. Claims 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. ('496) in view of Yamada et al. (U.S. 5,565,995).

Nagumo et al. ('496) discloses all the basic limitations of the claimed invention except for the detection of the developing bias potential, the detection of the dark potential and the light potential, the paper/toner image data feeder or image sensor.

Yamada et al. discloses an image recording apparatus comprising a correction of the drive current for driving the laser print head (35) (Fig. 4), which includes monitoring the developing bias power source (76) (Fig. 7), the temperature and humidity (Fig. 27),

the dot density wherein a toner image sensor (density detector 53, Fig. 12) is provided for detecting the density of the image formed on the photoconductor (40), which image pattern density ranges from the dark to light levels (Fig. 33).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the sensors for determining the developing bias potential and the density of the image formed on the photoconductor in the device of Nagumo et al. ('496) as taught by Yamada et al. The motivation for doing so would have been to compensate the driving current of the light source in accordance with the actual density data as recorded on the photoconductor.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagumo et al. ('496) in view of Yamada et al., as applied to claim 12 above, and further in view of Nagumo ('472).

Nagumo et al. ('496), as modified by Yamada et al., discloses all the basic limitations of the claimed invention including the pre-stored compensation data for correcting the driving current of the LED array but does not explicitly disclose the pre-stored data being the driving current correction data.

Nagumo ('472) teaches an LED printing device comprising a driving circuit for supplying driving current to the LEDs that includes a compensation memory (230c, Fig. 14) that stores the corrected driving current data, which are calculated based on the detected ambient temperature data and the compensated driving current data corresponding to room temperature previously stored in the EEPROM (100e) (col. 21, lines 25-44).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the corrected driving current memory into the device of Nagumo et al. ('496) as taught by Nagumo ('472). The motivation for doing so would have been to provide optimal driving current to the LED elements.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

September 14, 2005